Analysis of Plant Remains from the Wildwood site

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Table of Contents

Introduction

Archaeological plant assemblages represent only a small fraction of what was originally used and deposited by humans in open-air settings. Natural and cultural factors can significantly modify organic remains, resulting in recovered assemblages that differ dramatically from the original deposits. As archaeologists, we examine collections that have undergone a series of processes—from the original selection of plants and animals by humans, to food preparation, cooking, discard, animal and insect scavenging, burial, decay, and weathering, to the recovery of food residues by archaeologists. Using standard methodological procedures for sampling, quantification, and analysis allows us to make sense of our assemblages in spite of the deleterious effects of these processes. Here we report on the identification and analysis of three archaeobotanical samples from the Wildwood site in Virginia. Only basic results are discussed; due to a limited number of samples, no quantitative analysis was conducted.

Recovery and Preservation Bias

The circumstances under which plants preserve best archaeologically involve extreme conditions (e.g., exceptionally wet, dry, or cold environments) that prohibit decomposition of organic matter (Miksicek 1987). Plants can also preserve through exposure to fire, which can transform plant material from organic matter into carbon (Miksicek 1987). The likelihood that a plant will become carbonized varies according to the type of plant, how it is prepared and used, and whether it has a dense or fragile structure (Scarry 1986). Plants that are eaten whole are less likely to produce discarded portions that may find their way into a fire. Plants that require the removal of inedible portions (e.g., hickory nutshell, corn cobs) are more likely to find their way into a fire, and thus into the archaeological record. Inedible plant parts represent intentional discard that is often burned as fuel. Moreover, because inedible portions tend to be dense and fibrous, they are more likely to survive the process of carbonization than the edible parts (e.g., hickory nutshell vs. nutmeats). Physical characteristics are also important for determining whether or not a plant will survive a fire. Thick, dense nutshells are more likely to survive a fire than smaller, more fragile grass seeds. Food preparation activities also affect potential plant carbonization. The simple process of cooking provides the opportunity for carbonization through cooking accidents. Foods that are conventionally eaten raw, however, are less likely to be deposited in fires than cooked foods.

Some plants that find their way into the archaeological record in carbonized form were not eaten at all. Wood fuel is the most obvious example. Burned house structures can also yield carbonized plant deposits, and these deposits often differ dramatically from refuse deposits (Scarry 1986).

While we cannot ever hope to know the absolute quantities or importance of different plants in any past subsistence economy, the preservation and recovery biases discussed above do not prohibit quantitative analyses of archaeobotanical assemblages. The most commonly used plant resources in any subsistence economy are more likely to be subject to activities that result in carbonization (e.g., through fuel use and accidental burning) and ultimately, deposition (Scarry 1986; Yarnell 1982). Thus, we can quantitatively examine the relative importance of commonly used plant resources through time and across space.

Laboratory Procedures

Three flotation samples from the Wildwood site were collected with a collective volume of 23 liters. Both the light and heavy fractions of the flotation samples were analyzed. Although the materials from the light and heavy fractions were processed and sorted separately, data from the two fractions were combined for presentation. According to standard practice, the light fractions were weighed and then sifted through 2.0 mm, 1.4 mm, and 0.7 mm standard geological sieves. Carbonized plant remains from both fractions were sorted in entirety down to the 2.0 mm sieve size with the aid of a stereoscopic microscope (10–40 X). Residue less than 2.0 mm in size was scanned for seeds, which were removed and counted; in addition, taxa encountered in the 1.4 mm sieve that were not identified from the 2.0 mm sieve were also removed, counted, and weighed. Acorn nutshell was also collected from the 1.4 mm sieve as this tends to fragment into smaller pieces and can be underrepresented in the 2.0 mm sieve. Botanical materials were identified with reference to the paleoethnobotanical comparative collection at the University of California, Santa Barbara (UCSB) paleoethnobotany lab, various seed identification manuals (Martin and Barkley 1961; Delorit 1970), the USDA pictorial website (http://www.ars-grin.gov/npgs/images/sbml/), and Minnis (2003) which allowed us to identify the range of taxa native to the region. All plant specimens were identified to the lowest possible taxonomic level. Taxonomic identification was not always possible—some plant specimens lacked diagnostic features altogether or were too highly fragmented. As a result, these specimens were classified as "unidentified" or "unidentified seed." In other cases, probable identifications were made—for example, if a specimen closely resembled a sunflower seed, but a clear taxonomic distinction was not possible (e.g., the specimen was highly fragmented), then the specimen was identified as probable sunflower and recorded as "*Helianthus* cf.". Once the plant specimens were sorted and identified, we recorded counts, weights (in grams), portion of plant if relevant (e.g., acorn nutshell versus nutmeat), and provenience information. Wood was weighed but not counted, and no wood identification was conducted. Generally, most of the seeds identified in the samples were too small to weigh, and thus only counts were recorded. Other than counts and weights, no other measurements were taken on any specimens.

Basic Results

Table 1 lists the common and taxonomic names of all identified species. Raw counts and weights are provided for each taxon; plant weight and wood weight are also provided. Combined, these samples yielded 4 plant taxa (identified to the Genus level). Corn (*Zea mays*) was the only definitive field cultigen present in the sample. Fruit taxa recovered from the samples are represented by two species: one wild grape (*Vitis* sp.) seed and one blueberry (*Vaccinium* sp.) seed were identified. Each of these fruits is edible and would most likely have been eaten raw, incorporated into stews, or dried for later use (Scarry 2003). Wild legumes recovered include a possible tickclover (*Desmodium sp.*) and two possible bean family (Fabaceae) fragments, both of which may have been used as food (Hedrick 1972; Peterson 1977).

Table 1. Summary of plant taxa for Wildwood flotation samples

N of Samples	3		
Plant Weight (grams)	37.81		
Wood Weight (grams)	37.75		
Common Name	*Taxonomic Name*	Count (n)	Weight (g)
Cultigens			
Cf. Corn cupule	*Zea mays*	1	0.01
Corn kernel	*Zea mays*	1	0.01
Cf. Corn kernel	*Zea mays*	1	0.01
Fruits			
Blueberry	*Vaccinium* sp.	1	0
Grape	*Vitis* sp.	5	0
Wild Legumes			
Cf. Bean family	*Fabaceae*	2	0.01
Cf. Tickclover	*Desmodium* sp.	1	0
Unidentified			
Unidentifiable		17	0.02

An assessment of seasonality for these plants indicates the harvesting and collection of resources from May through October (Table 2). Blueberry is available throughout summer; corn is ripens between mid summer and early fall; Wild grape and tickclover can be harvested late summer through mid fall. The limited number of samples prevents us from drawing detailed conclusions or conducting any quantitative analysis about plant use at Wildwood. However, the presence of fruit seeds and possible legume seeds indicate potential collection and processing of these documented food sources.

Table 2. Seasonality of Fort Bragg plant taxa in ascending order by bloom

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Common Name												
Blueberry					X	X	X	X				
Corn							X	X	X			
Grape								X	X	X		
Tickclover cf.								X	X	X		

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